

SEQUENCE LISTING

<110> Vivien W. Wong, et al.

<120> MODIFIED CILIARY NEUROTROPHIC FACTOR, METHOD OF
MAKING AND METHODS OF USE THEREOF

<130> REG 142-C

<140> 09/577,468

<141> 2000-05-24

<150> 09/454,380

<151> 1999-12-03

<150> 09/373,834

<151> 1999-08-13

<160> 23

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 200

<212> PRT

<213> Homo sapiens

<400> 1

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Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1          5          10          15
Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
          20          25          30
Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
          35          40          45
Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
 50          55          60
Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65          70          75          80
Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
          85          90          95
His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
          100          105          110
Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
          115          120          125
Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
          130          135          140
Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145          150          155          160
Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
          165          170          175
Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
          180          185          190
Tyr Ile Ala Asn Asn Lys Lys Met
          195          200

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<210> 2

<211> 200

<212> PRT

<213> Rattus norvegicus

<400> 2

Met Ala Phe Ala Glu Gln Thr Pro Leu Thr Leu His Arg Arg Asp Leu
1 5 10 15
Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
20 25 30
Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
35 40 45
Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
50 55 60
Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65 70 75 80
Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
85 90 95
His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
100 105 110
Met Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Val
115 120 125
Leu Leu Glu Gln Lys Ile Pro Glu Asn Glu Ala Asp Gly Met Pro Ala
130 135 140
Thr Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145 150 155 160
Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
165 170 175
Arg Val Ile Ser Ser His Gln Met Gly Ile Ser Ala Leu Glu Ser His
180 185 190
Tyr Gly Ala Lys Asp Lys Gln Met
195 200

<210> 3

<211> 199

<212> PRT

<213> Oryctolagus cuniculus

<400> 3

Met Ala Phe Met Glu His Ser Ala Leu Thr Pro His Arg Arg Glu Leu
1 5 10 15
Cys Ser Arg Thr Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
20 25 30
Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
35 40 45
Asn Leu Asp Ser Val Asp Gly Val Pro Met Ala Ser Thr Asp Gln Trp
50 55 60
Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65 70 75 80
Arg Thr Phe His Ile Met Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
85 90 95
His Phe Thr Pro Ala Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
100 105 110
Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Val
115 120 125
Leu Leu Glu Cys Asn Ile Pro Pro Lys Asp Ala Asp Gly Thr Pro Val
130 135 140
Ile Gly Gly Asp Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys Val
145 150 155 160
Leu Gln Glu Leu Ser His Trp Thr Val Arg Ser Ile His Asp Leu Arg
165 170 175
Val Ile Ser Cys His Gln Thr Gly Ile Pro Ala His Gly Ser His Tyr
180 185 190
Ile Ala Asn Asp Lys Glu Met
195

<210> 4
 <211> 198
 <212> PRT
 <213> Mus musculus

<400> 4

Met Ala Phe Ala Glu Gln Ser Pro Leu Thr Leu His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Ser Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Thr Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Ala
 115 120 125
 Leu Leu Glu Gln Lys Val Pro Glu Lys Glu Ala Asp Gly Met Pro Val
 130 135 140
 Thr Ile Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Val Ile Ser Ser His His Met Gly Ile Ser Ala His Glu Ser His
 180 185 190
 Tyr Gly Ala Lys Gln Met
 195

<210> 5
 <211> 195
 <212> PRT
 <213> Gallus gallus

<400> 5

Met Ala Ala Ala Asp Thr Pro Ser Ala Thr Leu Arg His His Asp Leu
 1 5 10 15
 Cys Ser Arg Gly Ile Arg Leu Ala Arg Lys Met Arg Ser Asp Val Thr
 20 25 30
 Asp Leu Leu Asp Ile Tyr Val Glu Arg Gln Gly Leu Asp Ala Ser Ile
 35 40 45
 Ser Val Ala Ala Val Asp Gly Val Pro Thr Ala Ala Val Glu Arg Trp
 50 55 60
 Ala Glu Gln Thr Gly Thr Gln Arg Leu Leu Asp Asn Leu Ala Ala Tyr
 65 70 75 80
 Arg Ala Phe Arg Thr Leu Leu Ala Gln Met Leu Glu Glu Gln Arg Glu
 85 90 95
 Leu Leu Gly Asp Thr Asp Ala Glu Leu Gly Pro Ala Leu Ala Met
 100 105 110
 Leu Leu Gln Val Ser Ala Phe Val Tyr His Leu Glu Glu Leu Leu Glu
 115 120 125
 Leu Glu Ser Arg Gly Ala Pro Ala Glu Glu Gly Ser Glu Pro Pro Ala
 130 135 140
 Pro Pro Arg Leu Ser Leu Phe Glu Gln Lys Leu Arg Gly Leu Arg Val
 145 150 155 160
 Leu Arg Glu Leu Ala Gln Trp Ala Val Arg Ser Val Arg Asp Leu Arg
 165 170 175

Gln Leu Ser Lys His Gly Pro Gly Ser Gly Ala Ala Leu Gly Leu Pro
 180 185 190
 Glu Ser Gln
 195

<210> 6
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 6

Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Met Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Val
 115 120 125
 Leu Leu Glu Gln Lys Ile Pro Glu Asn Glu Ala Asp Gly Met Pro Ala
 130 135 140
 Thr Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Val Ile Ser Ser His Gln Met Gly Ile Ser Ala Leu Glu Ser His
 180 185 190
 Tyr Gly Ala Lys Asp Lys Gln Met
 195 200

<210> 7
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 7

Met Ala Phe Ala Glu Gln Thr Pro Leu Thr Leu His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val

85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 8
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 8
 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Val Ile Ser Ser His Gln Met Gly Ile Ser Ala Leu Glu Ser His
 180 185 190
 Tyr Glu Ala Lys Asp Lys Gln Met
 195 200

<210> 9
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 9

Met Ala Phe Ala Glu Gln Thr Pro Leu Thr Leu His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Met Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Val
 115 120 125
 Leu Leu Glu Gln Lys Ile Pro Glu Asn Glu Ala Asp Gly Met Pro Ala
 130 135 140
 Thr Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 10
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 10
 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Met Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Val
 115 120 125
 Leu Leu Glu Gln Lys Ile Pro Glu Asn Glu Ala Asp Gly Met Pro Ala
 130 135 140
 Thr Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met

195

200

<210> 11
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 11

Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 12
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 12

Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110

Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 13
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 13
 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
 50 55 60
 Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 14
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 14
 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr

20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Gln Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 15
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified CNTF

<400> 15
 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
 145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
 180 185 190
 Tyr Ile Ala Asn Asn Lys Lys Met
 195 200

<210> 16

<211> 184
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Ax-15 protein

<400> 16

Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu Ala
 1 5 10 15
 Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr Ala
 20 25 30
 Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile Asn
 35 40 45
 Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Arg Trp Ser
 50 55 60
 Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr Arg
 65 70 75 80
 Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val His
 85 90 95
 Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu Leu
 100 105 110
 Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile Leu
 115 120 125
 Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile Asn
 130 135 140
 Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys Val
 145 150 155 160
 Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu Arg
 165 170 175
 Phe Ile Ser Ser His Gln Thr Gly
 180

<210> 17
 <211> 185
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Methionine+ Ax-15 protein

<400> 17

Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
 1 5 10 15
 Ala Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
 20 25 30
 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
 35 40 45
 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Arg Trp
 50 55 60
 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
 65 70 75 80
 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
 85 90 95
 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
 100 105 110
 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
 115 120 125
 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
 130 135 140
 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys

145 150 155 160
 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
 165 170 175
 Arg Phe Ile Ser Ser His Gln Thr Gly
 180 185

<210> 18
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 18
 acggtaaagct tggaggttct c

21

<210> 19
 <211> 48
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
 tctatctggc tagcaaggaa gattcgttca gacctgactg ctcttacg

48

<210> 20
 <211> 69
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 20
 aaggtagcat aagcttggag gttctcttgg agtcgctctg cctcagtcag ctcaactccaa
 cgatcagtg

60
69

<210> 21
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 21
 tctatctggc tagcaaggaa g

21

<210> 22
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 22
 ccagatagag gagttaatga tactcct

27

<210> 23
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 23

gcgtcggccg cggaccacgc tcattaccca gtctgtgaga agaaatg

47